

Writing and Graphing Linear Functions in Three Forms

Grade 9 – Algebra 1 math · Test Answer Key · Standards: F-IF.C.7a, F-LE.A.1a, F-LE.A.2, A-CED.A.2

Use this answer key to score the test. Accept any equivalent form of an equation, such as point-slope or standard form, as long as the slope and a point are correct.

Standards: F-IF.C.7a, F-LE.A.1a, F-LE.A.2, A-CED.A.2 · **Level:** Grade 9 Algebra 1

Question 1 Slope (2 points)

$$\text{Slope} = (-1 - 7) \div (5 - (-3)) = -8 \div 8 = -1.$$

-1

Scoring: 1 point for the correct setup, 1 point for the answer.

Question 2 Line through two points (2 points)

$$\text{Slope} = (9 - 3) \div (8 - 4) = 6 \div 4 = 3/2.$$

$$y - 3 = (3/2)(x - 4), \text{ so } y = 1.5x - 6 + 3 = 1.5x - 3.$$

$$\text{Check: } 1.5(8) - 3 = 9.$$

$$\mathbf{y = 1.5x - 3}$$

Scoring: 1 point for the slope, 1 point for the equation.

Question 3 Rewrite in slope-intercept form (2 points)

$$-2y = -5x + 14, \text{ so } y = (5/2)x - 7.$$

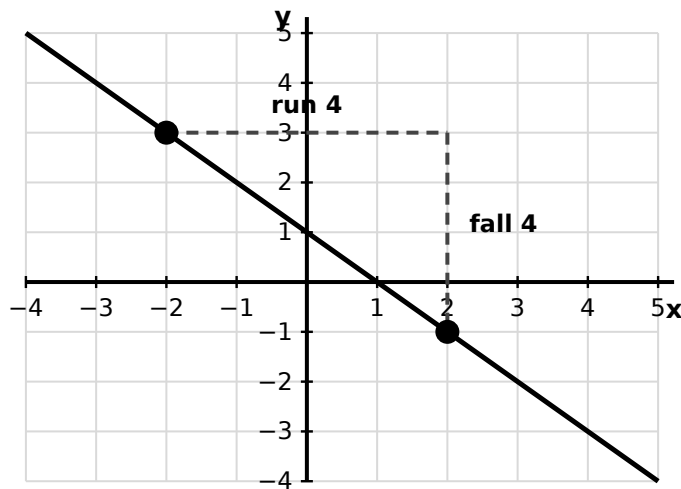
$$\mathbf{y = 2.5x - 7; \text{ slope } 2.5; \text{ y-intercept } -7}$$

Scoring: 1 point for the equation, 1 point for the slope and intercept.

Question 4 Equation from a graph (2 points)

$$\text{Slope} = (-1 - 3) \div (2 - (-2)) = -4 \div 4 = -1.$$

Point-slope: $y - 3 = -(x + 2)$, so $y = -x + 1$.



Run 4, fall 4: slope -1 .

Slope -1 ; $y = -x + 1$

Scoring: 1 point for the slope, 1 point for the equation.

Question 5 Parallel line (2 points)

The slope is -3 . $y - 6 = -3(x + 2)$, so $y = -3x - 6 + 6 = -3x$.

Check: $-3(-2) = 6$.

$y = -3x$

Scoring: 1 point for the slope, 1 point for the equation.

Question 6 Perpendicular line (2 points)

The negative reciprocal of $2/5$ is $-5/2$.

$y + 3 = -(5/2)(x - 10)$, so $y = -2.5x + 25 - 3 = -2.5x + 22$.

Check: $-2.5(10) + 22 = -3$.

$y = -2.5x + 22$

Scoring: 1 point for the slope, 1 point for the equation.

Question 7 Kayak rental model (3 points)

(a) $(75 - 39) \div (5 - 2) = 36 \div 3 = 12$ dollars per hour.

(b) $C - 39 = 12(h - 2)$, so $C = 12h + 15$.

(c) The intercept 15 is the flat fee in dollars, the cost for 0 hours.

$$\mathbf{C = 12h + 15}$$

Scoring: 1 point per part.

Question 8 Booth sales (3 points)

(a) $3s + 5l = 60$. When $l = 0$, $s = 20$; when $s = 0$, $l = 12$. Intercepts (20, 0) and (0, 12).

(b) (0, 12): if no small bags are sold, 12 large bags are needed to reach \$60.

(c) $3s + 5(6) = 60$, so $3s = 30$ and $s = 10$.

$$\mathbf{3s + 5l = 60; 10 \text{ small bags}}$$

Scoring: 1 point per part.

Question 9 Compare two lines (2 points)

(a) Slope of B = $(12 - 3) \div (4 - 1) = 3$.

(b) A has slope -2 , so it is decreasing; B has slope 3, so it is increasing and steeper because $|3| > |-2|$.

B is increasing and steeper

Scoring: 1 point per part.